



Saint Xavier
UNIVERSITY

SAINT XAVIER UNIVERSITY



TOWN OF GILBERT

DESIGN TEAM LEAD:

SMITHGROUP JJR

SPECIFICATION DOCUMENT
SPECIALITIES- SIGNAGE 10425

JANUARY 26, 2015

PREPARED BY:

THINKING CAPS DESIGN

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SPECIALTIES - SIGNAGE

PART I - GENERAL

I.01 RELATED DOCUMENTS

- A. Drawings, Contract Provisions, Special Provisions, Supplementary Provisions and Division I Specification Sections apply to the work of this Section.
 - I. Permits and Fees: Sign fabricator shall be responsible for obtaining all final permits and arranging for payment for all necessary fees. Sign fabricator is responsible for scheduling and/or attending meetings with the Town of Gilbert (TOG) for necessary approvals.

I.02 SUMMARY: SCOPE OF WORK

- A. The Work includes furnishing of all labor, materials, equipment, tools, insurance, permits, services, and licenses necessary to complete the work. The work is generally limited in scope as indicated by the Sign Program drawings and documents. However, the scope of the contract shall include all work necessary to achieve the proper execution and completion of this project which is clearly and reasonably inferable from these documents.
- B. Sign Fabrication: Types of signs and graphics are indicated on the Drawings and require various materials, various finishes, and various fabrication and installation techniques.
- C. Shop drawings, layouts, mock-ups and samples for designer and owner written approval.
- D. Structural design and calculations when appropriate to substantiate design. This includes certified engineer's review and stamp if required by code or contract documents.
- E. Installation of all fabricated signs, including all fasteners and fastenings, and where required, complete foundations.
- F. Coordination with Designer and TOG during all phases of development, fabrication and installation.
- G. Cutting and patching where required.
- H. Related Work Specified Elsewhere

I.03 SUBMITTALS

- A. General: Submit the following in accordance with the Contract Provisions and Specification Sections.
 - 1. Shop Drawings.
 - 2. Manufacturer's Product Data and Certification.
 - 3. Samples and mock-ups as noted.

I.04 SUBMITTAL REQUIREMENTS

- A. Submittals require a 10 working day review time from the time designer and TOG receives files and returns them to the distributing party. Fabricator will make no claims that work is being delayed unless prior written arrangement and agreement between all parties has been made for a shorter review time.
- B. Accompany submittals with transmittal letter containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Description of data contained in submittals.
 - 5. Listing of any letters containing description of deviations from Contract Documents.
 - 6. Other pertinent data.
- C. Submittals shall include
 - 1. Date and revision dates
 - 2. Project title and name.
 - 3. The names of: Designer, consultants, contractor, subcontractor, supplier, manufacturer, and separate detailer when appropriate or pertinent.
 - 4. Identification of products or materials.
 - 5. Relationship of materials to adjacent structure or other materials.
 - 6. Clearly identified field dimensions, when known.
 - 7. Specification Section number.
 - 8. Applicable standards, such as ASTM and others.
 - 9. A blank space, 4 in. x 4 in., for the Designer's (or consultants) and TOG's stamp.
 - 10. Identification and description of deviations from Contract Documents.

11. Request for selection of colors, patterns, and textures for materials contained in submittals.

NOTE: Provide each and every item of finish, including color, pattern and texture as selected or approved by Designer and TOG.

12. Contractor's stamp, initialed or signed, certifying to review of submittal, compliance with Contract Documents, and verification of field measurements when applicable.

D. Also note:

1. Notes on Drawings referring to actions by the designer, architect, or project manager.
2. Items which are complex, or are too large for practical handling and return shipping by Designer will be reviewed by Designer and TOG at fabricator's place of business.
3. First article of production-run items, both large and small, will be reviewed by Designer and TOG before production run is commenced.
4. It shall be the responsibility of the fabricator to schedule all review meetings for the convenience of the Designer.

E. Submit a sufficient number of sets for the designer and TOG to retain (4 sets.)

1.05 SHOP DRAWINGS

- A. Description: Original scaled drawings prepared by contractor, subcontractor, supplier, or distributor, which illustrates the work, including, but not necessarily limited to fabrication, layout, erection or attachment details.
- B. Cross reference shop drawings to contract Drawings and Specifications and detail all work included. Indicate dimensions, materials, fastening, anchorage, joining methods, sealing, backing, utility requirements, rough-in, and adjacent related conditions.
- C. Provide shop drawings for all items including:
 1. Complete fabrication and installation drawings for each type sign.
 2. Full size pattern layout of each sign typical type with all graphic elements.
 - 2a. Placement on sign face, letter spacing, size, spelling, punctuation, typestyle, legibility and other information which describes the sign layout. Layouts shall include outline of sign face for reference.
 - 2b. All letter styles shall be faithfully reproduced.
 3. Structural calculation, when required and as specified by contract documents, or local and state requirements.
 - 3a. Provide to establish actual details for load bearing structural elements necessary for sign support and assembly. A structural engineer registered in the state where the project is located shall seal structural design by the fabricator.

I.06 PRODUCT OR CATALOG DATA

- A. Submit only pages which are pertinent, or manufacturer's standard drawings modified to delete non-applicable data.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, charts, illustrations, test results, and other standard descriptive data.
 - 1. Mark-up each copy to identify pertinent materials, products, or models.
 - 2. Clearly mark-up each copy of the submittal data to identify the Section, page number, and Article of the Specifications to which it is references.
 - 3. Show dimensions and clearances required.

I.07 SAMPLES

- A. Physical samples to illustrate materials, equipment or workmanship, and to establish standards by which completed work will be judged. Note that for materials, and colors, sign contractor should match sample on file with the Designer and TOG.
 - 1. Samples: Submit four (4) samples of sufficient size to clearly illustrate:
 - 1a. Functional characteristics of product or material, with integrally related parts and attachment devices.
 - 1b. All samples to have a place for stamp approval.
 - 2. Required samples for review:
 - 2a. Each type exposed metal used for major elements of work with respective finish.
 - 2b. Each type adhesive vinyl film, including computer-cut designs.
 - 2c. All specified paint colors.
 - 2d. Special letters, numbers, or logo types.
 - 2e. A complete message in each typeface to demonstrate proper spacing.
 - 2f. Provide full-size patterns of each sign with solid black letterforms and graphic elements on a white background with the sign face outlined. Pattern must be film positive, camera-ready artwork, or pen plots. Typography and graphic elements must be represented on the patterns in exact position using exact element, typeface, and /or letter spacing.

I.08. CONTRACT MODIFICATIONS:

- A. The designer, with the TOG approval, may at any time, by written order and without notice to the contractor, make changes within the general scope of this contract including but not limited to changes (I) in any drawings, designs or specifications; (II) in the method, quantity or manner of performance of the work; (III) in any equipment, materials, services or site; (IV) directing acceleration in the performance of the work.

I.09 RESUBMITTAL REQUIREMENTS

- A. Shop drawings
 - 1. Review drawings and indicate revision date as required, and resubmit as specified for initial submittal.
 - 2. Indicate on drawings all changes which have been made which are different than those requested by Designer and TOG. The sign fabricator will review and resubmit the drawings to the Designer in a timely manner. Four (4) copies of the revised drawings will be provided to the Designer. The Designer, will, in turn review this resubmission in a timely manner and return the approved drawings to the Fabricator for construction.
- B. Product Data and samples: Submit new data and samples in accord with same criteria as required for first submittals.

I.10 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

- A. Distribute copies of shop drawings and product data which carry Designer's and TOG's approval stamp to:
 - 1. Contractor's file, job site file, and product record documents file.
 - 2. Subcontractor's, suppliers, and fabricators as appropriate.
 - 3. Other prime contractors.
- B. Distribute samples as directed.

I.11 QUALITY ASSURANCE

- ~~A. Qualifications: It is of critical importance that the sign fabrication company have a minimum of five years experience and that the company has demonstrated experience in the following areas of exterior and interior signage inclusive of:~~
 - ~~1. Experience in fabricating and installing interior / exterior signage similar in construction to the signs specified in this project.~~
 - ~~2. Experience in fabricating and installing interior/exterior signage which must be coordinated with other trades, i.e., Electrical, Structural, Surveying, etc.~~
 - ~~3. UL rated shop or can demonstrate that sub-contractor used has UL rating.~~
 - ~~4. Must have a fabrication facility which are adequate in size to accommodate the project.~~

5. ~~Indicate three (3) projects with this solicitation similar in nature to the project described herein; provide the following for each:~~
 - 5a ~~Name of Project and its geographic location.~~
 - 5b ~~Start date and completion date of project/work.~~
 - 5c ~~Owner's name, address, telephone and contact person.~~
 - 5d ~~Brief, but thorough, description of the work including all trades involved; Name(s) of responsible supervisory fabrication and installation personnel.~~
 - 5e ~~Submit photographs of project examples listed in above which display the work of the firm.~~
6. ~~The sign fabricator must have previous experience with the fabrication and installation of a similar interior sign program. At least two of the three projects listed above must be of similar complexity to project described herein.~~
7. ~~Firm References: Provide three (3) references from the experience list above. Provide contact name, address, telephone number and project name and location for each reference. It is imperative that accurate contact names and phone numbers be given for the projects listed. All references should include a contact person who can comment on the firm's ability to successfully complete a project of this type. The Owner reserves the right to contact references for any projects provided as noted above, or any other source available. Such references will be held in the strictest confidence.~~

~~Minor irregularities in the bid which are immaterial or inconsequential in nature may be waived whenever it is determined to be in the best interest of the TOG. If company literature or other publications are included, they should include reference to the document name and page. Submittals containing no such citations will be considered complete and without need to refer to other documents.~~
8. ~~Subcontractors: All sub-contractors must be identified, and a complete description of their role relative to this contract must be included. It is highly desirable that all sub-contractors named will have prior experience working as a team. All sub-contractors must have a good working relationship with the prime contractor.~~
9. ~~Any sub-contractors performing lighting or electrical roles must be UL rated. If no subcontractors are noted, it is understood that all work will be performed by the fabricator's staff. TOG reserves the right to accept or reject any sub-contractor.~~

A. B.

Design criteria:

- I. Structural design: Details on Drawings indicate a design approach for sign structures but do not necessarily include all fabricating details required for the complete structural integrity of the signs, including consideration for static, dynamic and erection loads during handling, erecting, and service at the installed locations, nor do they necessarily consider the preferred shop practices of the individual sign fabricators, therefore, it shall be the responsibility of the fabricator to perform the complete structural design of the signs and to incorporate all the reasonable safety factors necessary to protect the TOG, Designer and sign fabricator against public liability. Designs which survive rational engineering analyses will be acceptable. Design must meet all applicable local, State, and national codes, as well as testing laboratory listings where required.
 - Ia. Include foundations when a part of the signs and graphics work.
 - Ib. Submit calculations, signed and sealed by a registered professional engineer, to Designer and TOG for review.
 - Ic. When required because of size or weight of sign, provide lifting eyes as an integral part of design. Lifting eyes shall be inconspicuous in the finished work as approved by Designer.

~~C. Installer: The work of this section shall be performed by an installer having a minimum of 5 years successful experience in the fabrication and installation of signage for items specified on Projects equivalent in scope to this Project.~~

B. D.

Reference Specifications and Standards: Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:

1. ACI: 347 Recommended Practice for Concrete work.
2. ANSI: B18.22.1 Plain Washers.
3. ASTM: A36 Structural Steel .
4. ASTM: A53 Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
5. ASTM: A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
6. ASTM: A167 Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
7. ASTM: A269 Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
8. ASTM: A307 Carbon Steel Externally and Internally Threaded Standard Fasteners.
9. ASTM: A312 Seamless and Welded Austenitic Stainless Steel Pipe.
10. ASTM: A366 Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
11. ASTM: A525 Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, General Requirements.

12. ASTM: A526 Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.
13. ASTM: B32 Solder Metal.
14. ASTM: B137 Measurement of Weight of Coating on Anodically Coated Aluminum.
15. ASTM: B209 Aluminum-Alloy Sheet and Plate.
16. ASTM: C94 Ready-Mixed Concrete.
17. ASTM: C523 Test for Specular Gloss.
18. ASTM: E84 Surface Burning Characteristics of Building Materials.
19. ASTM: D635 Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
20. ASTM: F468 Non-Ferrous Bolts, Hex Cap Screws, and Studs for General Use.
21. AWI: Architectural Woodwork Quality Standards.
22. AWS: D1.1 Structural Welding Code - Steel.
23. CRSI: Concrete Reinforcing Steel Institute Manual of Standard Practice.
24. FGMA: Glazing Manual.
25. NAAMM: Metal Finishes Manual.
26. SMACNA: Architectural Sheet Metal Manual.
27. WWPA: Grading Rules.
28. Federal Standard 16 CFR 1201: Federal Safety Standard for Architectural Glazing Materials.

1.12 PROPRIETARY INFORMATION

- A. All ideas, designs and configurations represented by these drawings are the sole property of Thinking Caps Design (TCD) and were created for the one time use. None of the ideas, designs or configurations may be used for any other purpose, including the creation of merchandising items, without the written permission of TCd or Saint Xavier University (SXU) nor may the materials or ideas contained herein be disclosed to any other individual, firm or corporation without written permission from the above designer or owner.
- B. All original materials, including artwork, disks and reproducible drawings shall be returned to TCd upon completion of the project.
- C. TCd shall have the right to include a credit line on completed designs or any visual representations such as drawings, models or photographs. The credit shall be included in any publication of the design.
- D. TCd shall have the right to photograph all completed designs or installations and have the right to use such photographs for exhibition or marketing purposes.

I.13 DESIGN INTENT DRAWINGS

- A. These Design Intent Drawings are for the sole purpose of conveying design intent and are not intended for construction purposes.
- B. Construction drawings / shop drawings are the responsibility of the appropriate fabricator / contractor for each of the disciplines contained herein.
- C. TCd and the TOG shall review all shop drawings for conformance with the design intent of these drawings and will not be responsible or liable for any results of construction from working drawings, material selection, shop drawings or any other agreements.
- D. **GRAPHIC CONTENT / TYPOGRAPHY**
 - 1. Type shall be identified at the beginning of each section of the drawing package.
 - 2. Lettering shown on the drawings are intended as guidelines for layouts and type size only, and are based on scale calculations of the message lengths within estimated sign areas. Should conflicts arise in the final message layout, notify the Designer before proceeding. Notations contained within brackets [] in the message schedule are instructions referencing a name to be supplied by the Owner or instructions for glyphs that are to be included on the sign.
 - 3. All type shall be straight and accurately spaced with square corners, uniform curves, correct spelling and punctuation, and all finishes smooth with no visible imperfections.
 - 4. Typeface or weight not described in the drawing package may not be used. Modifications to the typefaces, such as condensing, expanding or compressing are not acceptable.
- E. **DIGITAL ARTWORK**
 - 1. Digital artwork for all glyphs, symbols, arrows and icons will be provided by TCd and SXU. The fabricator is responsible for enlarging this artwork to full size of cropping as indicated in the Sign Program for fabrication.
 - 2. Typeset copy and originals of logos and motifs and patterns need to be camera-ready artwork used for fabrication. All digital artwork will be provided electronically and will be MAC software based. It is the responsibility of the fabricator to access the digital information correctly. Hard copies of the artwork will not be provided.
 - 3. Digitally scanned copy, logo and motifs at 1200 dpi, not human digitization, must be used for initial layouts prepared for review. Do not under any circumstances, use printed construction documents as base art.

F. **ADA ACCESSIBILITY GUIDELINES**

1. All signage within the Sign Program must comply with the ADA Accessibility Guidelines where applicable. Lettering and graphics including both, but not limited to, copy height, letter stroke, symbols, materials, and finishes shown on the drawings are intended as guidelines for compliance. Should conflicts or questions arise, notify TCd before proceeding.
2. Where braille copy is required, the Sign Contractor is responsible for the coordination of all messages in conjunction with sign schedule. Braille copy shown on drawings is for general size and position only and should not be used for full message.
3. The fabricator shall provide written documentation the braille translation included on the signage has been evaluated by the American Foundation for the Blind and is, in their opinion, correct and compliant with ADA Accessibility Guidelines.

I.14 MAINTENANCE MANUALS

A. General:

1. Submit maintenance manuals describing the materials, devices and procedures to be followed in cleaning and maintaining signs for use during construction and for use by the owner after acceptance of the Work. Include manufacturer's data describing the actual materials, finishes and all other major components used in the Work.
2. Provide three up-to-date copies of all shop drawings, product data, and other information described in this Section for TOG's use in compiling maintenance manuals.
 - a. Make required submittals not later than two weeks prior to scheduled completion of project.
 - b. Submittals made by permanent reproduction copy equipment from typewritten or typeset originals.
 - c. Pre-punch 8-1/2 in. x 11 in. sheets for standard three ring binders.
 - d. Submit larger sheets in rolled and protected packages.

B. Compilation: The TOG will receive shop drawings, brochures, materials lists, technical data of all types, warranties, guarantees, and other pertinent information from Contractor and will assemble, catalog, and file information in loose-leaf, hardback, three-ring binders.

C. Submittal format: (Provide each of the following items, as applicable, for each required item).

1. Manufacturers data: (Provide catalog data sheets, specifications, nameplate data, and parts list).
2. Extra parts: (Provide a listing of extra stock or parts furnished as part of the Contract).
3. Warranties: (Provide specific manufacturers warranty. List each component covered, with day and date warranty begins, date of expiration, and name, address and telephone number of person to contact regarding problems during warranty period.
4. Provide names, addresses, and telephone number of General Contractor, its subcontractors, suppliers, installers, and authorized service and parts suppliers).
Format as follows:

- a. Contractor: _____
Address: _____
Telephone No.: _____
Fax No.: _____
Person to Contact: _____
- b. Sub-Contractor: _____
Address: _____
Telephone No.: _____
Person to Contact: _____
- c. Installer: _____
Address: _____
Telephone No.: _____
Fax No.: _____
Person to Contact: _____
- d. Local Representative: _____
Address: _____
Telephone No.: _____
Fax No.: _____

I.15 PHASES OF SIGNAGE

- A. Sign Fabricator may fabricate all phases of signage and warehouse signage in the event the site is not ready for installation.

I.16 DELIVERY AND HANDLING

- A. It is the responsibility of the fabricator / installer to transport, deliver, handle, and store materials and equipment at the job site in such manner as to prevent damage, including damage to finish and damage which might result from the intrusions of foreign matter or moisture from any source.
- B. Packaging:
 - 1. Maintain packaged materials in manufacturer's original container with seals unbroken and labels intact until they are incorporated into the Work.
 - 2. Packaged material shall bear the name of the manufacturer, the product, including brand name, color, stock number, and all other complete identifying information.
 - 3. Packages showing indications of damage that may affect conditions of content are not acceptable.
- C. Promptly remove all damaged or otherwise unsuitable materials and equipment from the job site.
- D. Storing:
 - 1. Store all materials and equipment: a. In accord with manufacturer's instructions. b. Above grade. c. Properly protected from weather and construction activities.
- E. Protection:
 - 1. Protect all finished building surfaces, including jambs and soffits of all openings used as passage-ways through which materials and equipment are handled.
 - 2. Provide protection for all finished flooring surfaces in traffic areas before allowing materials and equipment to be moved over those finished surfaces.
 - 3. Maintain all finished surfaces clean, un-marred and suitably protected until accepted by the TOG.

I.17 CONTRACTOR'S RESPONSIBILITIES

- A. The contractor shall supervise, direct and be solely responsible for the work, using his best skill and attention to detail.
- B. The contractor shall be responsible to the owner for the acts and omissions of its employees, subcontractors and their agents and employees, and other persons performing any of the work under a contract with the contractor.
- C. The contractor shall confine operations at the site to areas permitted by law, ordinances, permits, and the contract documents, and shall not unreasonably encumber the site with any materials or equipment.

- D. The contractor shall perform all work in a professional manner and in accordance with the requirements of the contract documents, including the furnishing of all materials, services, implements; machinery, equipment, tools, supplies, transportation, labor, and all other items necessary for the satisfactory prosecution and completion of the project in full compliance with the requirements of the contract documents.
- E. The contractor shall not be relieved from his obligation to perform the work in accordance with the contract documents whether by the contract, or by inspections, tests, or approvals, required or performed by persons other than the contractor.
- F. Coordinate with other trades to assure proper and adequate provision in work of those trades for interface with the work of this specification. Coordinate schedules for installation of the work of this specification with schedules for other installations, to provide orderly progress of the total construction sequence.
- G. Upon completion of the project, the contractor shall promptly remove all implements, surplus property and debris from the project site.
- H. Contractor responsible for errors and omissions in submittals or deviations from Contract Documents is not relieved by designer's and TOG's review of submittals.
- J. Contractor responsible for deviations in submittals from requirements of Contract Documents is not relieved by designer's and TOG's review of submittals.
- K. Notify Designer and TOG in writing of deviations from requirements of Contract Documents at time submittals are made.
 - 1. A "deviation" shall be construed to mean a minor change to the sequence indicated on Drawings or specified.
 - 1a. A "deviation" is not intended to allow substitutions or product options.
 - 2. In addition to notifying Designer in writing of deviations, circle deviations on shop drawings.

SECTION 10425

SPECIALTIES - SIGNAGE

PART 2 - PRODUCTS

2.01 RELATED DOCUMENTS

- A. Drawings, Contract Provisions, Special Provisions, Supplementary Provisions and Division I Specification Sections apply to the work of this Section.

2.02 GENERAL:

- A. Materials shall be new stock, free from defects, imperfections strength, durability, and appearance. Provide materials as shown and detailed on drawings and as specified herein.

2.03 MATERIALS - METALS

- A. General: For fabrication of exposed metal work, use only materials which are smooth and free of surface blemishes including pitting, roughness, seam marks, roller marks, and trade names. Do not use materials which have stains and discoloration. Provide sheet stock from a mill which has been stretcher leveled to highest standard of flatness commercially available.
- B. Sheet aluminum: 5000 Series for anodized finish, and Alloy 3000 Series for painted finish. Provide with mill finish for work which will receive a painted finish.
 - 1. Not less than the strength and durability properties specified in ASTM B-109.
- C. Extruded aluminum: Alloy 6063-T5. Provided mill finish for work which will receive a painted finish.
 - 1. Not less than the strength and durability properties specified in ASTM B-221.
- D. Aluminum in contact with steel other than non-magnetic stainless steel, shall have adequate protection to eliminate any possibility of electrolysis. Isolate aluminum surfaces in contact with steel, masonry, concrete or plaster with even coat of alkali resistant asphaltum base paint.
- E. Metal thickness: Provide metal thickness indicated on Drawings. When metal thickness is not indicated on Drawings, provide thickness most appropriate for the fabrication condition to prevent warping or distortion.
 - 1. For sheet steel not indicated, use not less than 20 gauge.
 - 2. For non-ferrous metal not indicated, use not less than 0.063" in thickness .

- F. Stainless steel: Type 302 or 304, ASTM A167.
 - 1. Matte finish: Provide exposed surfaces not otherwise indicated with No. 4 grind finish.
 - 2. Unexposed surfaces may be mill finish.
- G. Corten Steel
 - 1. ASTM A242(1), MIL-S-12505A and SAE J410.

2.04 MATERIALS - PLASTICS

- A. Acrylic: Provide cast (not extruded) methylmethacrylate Monomer plastic sheet with a minimum flexural strength of 16,000 PSI, when tested in accordance with ATSM D790, minimum allowable continuous service temperature of 180 degrees F.
 - 1. Provide solid sheet, laminated sheet, or cast acrylic in size, thickness, clarity, opacity, texture, and color required for work or specified in drawings.
 - 2. Edges shall be free of saw marks, chips, and to be square to face of material. All edges are to be smooth unless otherwise specified.
 - 3. Transparent Sheet: Where indicated as "Clear" provide colorless sheet with light transmittance of 92%, when tested in accordance with ASTM D 1003, in matte finish unless otherwise indicated.
 - 4. White Translucent Sheet: Where indicated as "White" provide white translucent sheet of density required to provide uniform brightness and minimum halation.
 - 5. Colored Translucent Sheet: Where indicated as "Colored", provide white translucent sheet of density required to provide uniform brightness and minimum halation.
 - 6. Frosted Acrylic: Where indicated as "Frosted" provide clear acrylic sheet with matte finish: Auto Haas # P-95 or approved equal.
 - 7. Non-glare: As manufactured by Mitsubishi or approved equal. Edges shall be free of saw marks, chips, and be square to face, smooth and polished unless otherwise specified.
- B. Suppliers (or approved equal) :
 - 1. Plexiglas: Auto Haas Company, Independence Mall West, Philadelphia, PA 19105
215-592-3000, 800-523-7500
 - 2. Lucite Cast Acrylic: ICI Acrylics, Inc., 3411 Silverside Road, McKean Building, PO Box 15391, Wilmington DE 19850
800-4- LUCITE

3. Polycarbonate: Tuffak® by Auto Haas, or Lexan® by General Electric.

a. Provide with scratch and ultra-violet resistant coating.

2.05 PHOTOMOLYMER SHEETING:

A. A nylon polymer emulsion permanently bonded to a .040" metal substrate. The letters, numerals, symbols, pictograms and Grade 2 Braille shall be raised .040" from background. Raised graphics and Braille shall have a hardness (Shore D) of 55.

SCREEN PRINT NOT APPLICABLE

2.06 SCREEN PRINTING INKS:

A. Provide photo processed screening, arranged to furnish sharp and solid images without edge buildup or bleeding of coating. Pattern cut screens may not be used. Ink to be totally opaque and color not limited to manufacturer's standard color. Screen mesh to be 390 or finer. Provide only weather resistant coating materials, compatible with the intended substrates.

B. Acceptable Ink manufacturers:

I. Nadzar, Chicago, IL.
1-800-677-4657

2.07 COMPUTER-GENERATED VINYL GRAPHICS:

A. Materials: Pre-spaced matte finish of 3M ScotchCal® film or Scotchlite® in mil thickness, unless otherwise noted, in typeface, spacing, and color noted on Drawings. Colors to be integral and not surface applied, unless otherwise noted. Paints, inks, dyes, and other materials used in the process shall be compatible and guaranteed not to cause discoloration, deterioration, or delamination. Pressure-sensitive adhesive type, .0035" thickness, 3M "Scotchcal" or Scotchlite.

B. Manufacturer: 3M Commercial Graphics Division,
3M Center Building, 220-6W-06, St. Paul, MN 55144
800-328-3908

C. Installation: Prepare surfaces to receive characters with appropriate solvent before application, followed by water, rinse and thorough drying. Application of Letters to sign faces shall be square, plumb, and true without bubbles or lifted edges. Perform die-cutting in such a manner that edges and corners of finished letterforms are true and clean. Letterforms with rounded positive or negative corners, nicked, cut or ragged edges, etc. will not be accepted.

D. All inks, paints, dyes, and other materials used in the process will be compatible and guaranteed against discolorations, deterioration or delamination.

2.08 MATERIALS - ADHESIVES

- A. Adhesives: In accordance with recommendations made by manufacturer of material to be laminated or adhered. Adhesives that fade, discolor, or delaminate as a result of ultraviolet light or heat shall not be used. Adhesives shall be of non-staining and non-yellowing quality. Visible joints shall be free from air bubbles and other defects.
- B. Cement for acrylic plastic: No. 4 cement by Industrial Polychemical Co.
- C. Silicone Adhesives: Ready to use, high performance adhesive. General Electric GC 1200 sealant, translucent SCS 1201 or equal as recommended by manufacturer for bonding condition. Silicone Adhesives: General Electric or Dow Corning

2.09 PAINT

- A. Provide an aliphatic polyurethane enamel with ultraviolet inhibitors, lightfast, weather, abrasion and wear resistant additives supplies by:
M.A.P. Acrylic Polyurethane, Matthews Paint Co, Kenosha WI. (1-800-323-6593)
 - 1. Exact identification number to be noted on shop drawing.
 - 2. All paint finishes to be satin; not gloss, high gloss or matte, unless otherwise noted.
 - 3. All exterior painted surfaces shall be finished with a satin UV clearcoat, unless otherwise noted.

2.10 MOUNTING PINS

- A. Materials: Threaded studs 3/16" minimum diameter x 2" long minimum, unless heavier gauge pin mounts are required by size and weight of material to which it is applied.
- B. Installation: Weld or attach studs to sign plaques with no distortions or discoloration to sign-face. Minimum of four studs per plaque. Use epoxy adhesive where required in wall mounts.

CONCRETE NOT APPLICABLE

2.11 MATERIALS - CONCRETE

- A. Portland Cement: ASTM C150, Type I. Use only one brand of cement from one mill throughout the work, unless otherwise approved by the COTR. The alkali content shall not exceed 0.6% unless the manufacturer certifies that no alkali reactivity is produced with the proposed combination of materials when tested in accordance with ASTM C227.
- B. Admixtures: Use only with the prior written approval of the COTR. Admixtures submitted for COTR's review shall be certified in writing by the manufacturer to be in compliance with ASTM C494. Do not use any admixtures which contain chlorides.

- C. Water: Conform to ACI 301, Chapter 2, Paragraph 2.3.
- D. Fine Aggregate: ASTM C33.
- E. Aggregate for Lightweight Concrete Fill: Rotary kiln produced expanded shale, slate, clay or slag conforming to ASTM C330.

- F. Concrete Mixes: Proportioning of Concrete
 - 1. Assume full responsibility for the strength, consistency, water/cement ratio, and handling of concrete. Design mixes in accordance with ACI 211.1 or ACI 211.2.
 - 2. Use the minimum amount of water necessary to produce a mix that can be worked readily into corners and around reinforcement without permitting segregation of materials, air pockets or free water to collect on surfaces. The maximum water-cement ratio shall be in accordance with ACI 301, Chapter 3, Paragraph 3.8, Method 1 or Method 2.
 - 3. Adjust the consistency of any mix to allow for specific placing conditions.
 - 4. Measure materials for concrete by weighing. Separately weigh each size of aggregate and the cement; each shall be accurate within 1%. Cement in sacks of ninety-four pounds need not be weighed, but weigh bulk cement and fractional packages. Measure mixing water by volume.
 - 5. Prepare design mixes, prior to the beginning of the work, in accordance with ACI 301, Chapter 3, Paragraph 3.8, Method 1 or Method 2, and Paragraph 3.8.3.
 - 6. Mix Properties: Provide concrete mix with the following minimum properties:
 - 6a. Compressive Strength: 3000 PSI at 28 days.

- G. Concrete Custom Form Liners
 - 1. Smaller text is to be achieved by use of custom form liners to achieve smaller letterform casting. Form liner artwork will be supplied by designer.
 - 1a. Supplier for custom form liners is:
Scott Systems
1788 Helena Street
Aurora, CO 80011
Phone 303-341-1400
OR APPROVED EQUAL

- H. Pre-Cast Concrete Elements
 - 1. All colors and finishes as designated in the drawings are to be submitted as samples for review prior to casting.
 - 1a. Supplier for pre-cast concrete elements is:
Smith Precast
2410 West Broadway
Phoenix, AZ 85041

- J. Concrete Sandblasting
 - I. Abrasive blasting: Light blast – expose fine aggregate with occasional exposure of coarse aggregate and uniform color. Maximum reveal 1/8 inch. Abrasive blast corners and edges of patterns carefully, using back-up boards, to maintain uniform corner or edge line. Determine type of nozzle, nozzle pressure, and blasting techniques required to match design reference sample or mockup.
- K. Concrete Coordination
 - I. Sign fabricator shall provide information regarding sign element attachment or cast-in-place letter plug requirements to coordinate with concrete bases and/or sign panel areas built by others.
- L. Typesetting
 - I. Must achieve proper letterforms and spacing as indicated on Drawings. Designer will supply actual layouts when indicated.

2.12 ELECTRICAL

- A. Power Requirements: Make final connections of illuminated signage from junction boxes located adjacent to or within signage. Materials for electrical shall be in accordance with the requirements of the National Electrical Code, and local codes. Sign fabricator to provide electrical power requirements to architect or designer for coordination.
- B. Conduit: In accordance with National Electric Code requirements and as follows: Conduit shall be galvanized rigid conduit for entire installation except as noted or shown. PVC Schedule 40 may be used for direct burial where installation is a minimum of 24" below grade.
- C. Fluorescent Lighting:
 - I. Submittals: Submit Shop Drawings which clearly indicate type, color, quantity, etc. of each lamp(s) to be used.
Product Data: Provide name of manufacturer, brand name, and catalog number of each item. Listing items "as specified" without both make and model or type designation is not acceptable, except pipe and fittings not specified by brand names shall be listed "as specified" without manufacturer's name, provided proposed materials comply with Specification requirements.
Descriptive Data: Submit copies of complete description, information, and performance data covering materials and equipment which are specified but for which catalog numbers, brand names, or specific models have not been used.
Quality Assurance: Comply with UL (listed and labeled), NEMA, NFPA 70 (NEC) and IES. Comply with applicable codes, rules and regulations, including all building and safety laws or regulations relating to building, public health and safety.

2. Fixtures: Furnish with proper junction boxes, hangers, hardware, supports, canopy extensions, plugs as required for application. Furnish complete with lamps of proper size, type, manufacturer, color, and voltage. Furnish with 5 feet of flexible conduit prewired, where applicable. Fixtures shall be furnished complete with gaskets, weatherproof outlet boxes, labeled approved for damp locations, have lamp bases coated with an inhibitor to prevent base from corroding to the socket and be solidly grounded. Fixtures shall be furnished with wire, conduit and control (photo-cell/time-switch).
3. Ballasts: High power factor type as required by work conditions, as manufactured by General Electric, Allanson, or approved equal. Class P thermal grade and shall not exceed 90 deg. C. operating temperature in a 55 deg. C. heat box. Provide ballasts that are ETL/CBM certified, NEMA labeled, UL listed for specific applications and free of magnetic hum. Guarantee for two years from any defects. Ballasts shall have automatic resetting thermal protection, sound rated "A" or better (20 to 24-db), and shall be high power factor type. Ballasts shall be rated 120 volt or as required for the application and shall be dry type.
4. Fluorescent lamps: Warm white unless otherwise indicated on drawings.
5. Time switches: Furnish and install where shown on the Shop Drawings, Paragon Cat No. 4213-OSZ or as noted on the Drawings, double pole single throw automatic time switch, complete with "Astro-Dial", 40 amp auxiliary contacts, etc. Mount 6'-0" minimum above finished floor or ground level at location indicated on drawings.
6. Photo-cells: Sh: As manufale Controls, Inc., Tork, or McGraw-Edison, minimum 3000 Watts, 10 amps at 120 volts, model T 30-0 or 18800 Watts model T-5 or approved equivalent. Die cast aluminum housing for 3/4 inch conduit threaded hub nipple. Directional lens. (Reference Precision Bulletin #101.) For 208 or 277 volt circuits use locking type control - 1800 Watts Reference Precision #201. Photocells shall fail in the "on" position.
7. Installation: Install fluorescent lighting fixture in accordance with manufacturer's written instruction and approved shop drawings.
- D. LED Lighting:
 1. Submittals: Submit Shop Drawings which clearly indicate type, color, quantity, etc. of all equipment to be used.
Product Data: Provide name of manufacturer, brand name, and catalog number of each item. Listing items "as specified" without both make and model or type designation is not acceptable, except pipe and fittings not specified by brand names shall be listed "as specified" without manufacturer's name, provided proposed materials comply with Specification requirements.

Descriptive Data: Submit copies of complete description, information, and performance data covering materials and equipment which are specified but for which catalog numbers, brand names, or specific models have not been used.

Quality Assurance: Comply with UL (listed and labeled), NEMA, NFPA 70 (NEC) and IES. Comply with applicable codes, rules and regulations, including all building and safety laws or regulations relating to building, public health and safety.

2. Furnish with proper junction boxes, hangers, hardware, supports, plugs as required for application. Furnish complete with lighting elements of proper size, type, manufacturer, color, and voltage. Fixtures shall be furnished with wire, conduit and control (photo-cell/time-switch).
 3. Photo-cells: As manufactured by Controls, Inc., Tork, or McGraw-Edison, minimum 3000 Watts, 10 amps at 120 volts, model T 30-0 or 18800 Watts model T-5 or approved equivalent. Die cast aluminum housing for 3/4 inch conduit threaded hub nipple. Directional lens. (Reference Precision Bulletin #101.) For 208 or 277 volt circuits use locking type control - 1800 Watts Reference Precision #201. Photocells shall fail in the "on" position.
 4. Installation: Install in accordance with manufacturer's written instruction and approved shop drawings.
- E. Neon
1. Quality Assurance: The applicable chapters of "Neon Techniques and Handling: A Handbook of Neon Sign and Cold Cathode Lighting" by Samuel C. Miller dealing with Shop Practice shall be incorporated in the practices, design, fabrication and installation as they relate to the work specified herein. Work under this specification shall conform to the NEC, local and state ordinances as applicable. Submit full size layout of special graphic units. Warranty complete installation in writing for one year after acceptance by Owner. Guarantee shall include replacement of weak, flickering or dead tubes and any defective electrical equipment. At the end of the warranty period, the fabricator shall make an annual, renewable Service Contract available to the Owner. The Owner shall reserve the right to accept or refuse the offer of this Service Contract when offered by the fabricator.
 2. Materials:
 - 2a. Glass tubing: As manufactured by Corning Glass Works, type and color as required. Size to be 13 to 15 mm unless noted otherwise.
 - 2b. Gases: Neon, helium, argon and other rare gas mixtures as required to achieve colors as selected by Architect. Mercury vapor as required.
 - 3c. Electrodes: Pre-manufactured metallic, sputter-resistant type of proper size and type with lead-in wires constructed of dumet wire as manufactured by Sylvania or approved equal.
 - 3d. Electrical equipment: System shall be designed as based upon 60 milliamp current unless noted otherwise and including, but not limited to, the following items.

- 3e. Insulators and mounting parts, including elevation or tube posts for mounting the tube proper, housings or rings for shielding the electrodes in the metal sign, and cable supports for mounting the high-voltage cable.
- 3f. High-voltage cable, which connects the electrode terminals to each other or to the luminous tube transformer.
- 3g. Luminous tube transformer, which steps up the line voltage to the high voltage required for the tubes.
- 3h. Low-line voltage wiring, including cable, conduit, line-voltage switches, and connections to junction boxes.
- 3i. Special switching such as time clocks and photoelectric relays.
- 3j. Power-factor correction, for improving the power factor of the luminous tube transformer. Transformers shall include power-factor correction. If a transformer is used without power-factor correction, condensers shall be added to correct the power-factor. It shall be necessary to correct the power-factor from 85 to 90 per cent or better.
- 3k. Radio-interference eliminators, for reducing the radio noise caused by neon lighting installation.
- 3l. Damaged and broken glass tube sections shall be carefully removed and glass fragments swept and the area adjacent to the broken glass shall be vacuum cleaned to remove glass particles. Finishes damaged by broken glass shall be returned to original condition.
- 3m. If special structural reinforcement is necessary to ensure the proper installation of any signage element, the Contractor must notify the architect in writing for proper coordination of site preparation.

FOAM NOT APPLICABLE

2.13 FOAM MATERIAL:

- A. Provide in standard commercial density and hardness as required for fabrication, strength, and durability. Foam to be sealed, primed and painted per manufacturers specifications.

2.14 RIGID VINYL

- A. Sintra®: Material is a foamed, closed cell polyvinyl chloride (PVC). Note: Sintra is a registered trademark of Consolidated Aluminum Corporation, manufactured domestically by Alucobond Technologies, i.c.
1. For bonding Sintra® material to itself use the same solvent type adhesives that are used for rigid PVC's such as THF (tetrahydrofuran), cyclohexanone, or MEK (methly ethylketone) based.
 2. For joining Sintra® material to other substrates, solvent-dispersed adhesives formulated for PVC bonding can be used, as coan most neoprene-based adhesives and mastics.
 3. Prior to painting , it is recommended that the surface be cleaned with a rag moistened with an alphatic solvent such as heptane, octane, or VM & P Naptha. The paint should be acrylic lacquer or two-component polyurethane.

BRONZE NOT APPLICABLE

2.15 BRONZE SIGNS AND PLAQUES

- A. Provide materials and workmanship equivalent to:

PMA
2732 W. McDowell Rd.
Phoenix, AZ 85009-2605
Phone 602-278-7800
Fax 602-278-7847

1. Bronze (Muntz): Alloy 280 (60% copper, 40% zinc)
 - a. Finish: Matthews clear Braco finish .

IMAGE AND TEXT INTERPRETIVE NOT APPLICABLE

2.16 IMAGE AND TEXT INTERPRETIVE PANELS

- A. Photo panels are to be achieved with custom embedded graphic panels. Grade: UV Solid Phenolic, Thickness: 1/8", Finish: Satin UV.
- B. Color transparencies of photographic images will be supplied by designer and are to be scanned and separated for reproduction within the fabricator's contract. Those separations are to be achieved by separate vendor prior to the order of these photographic panels. Digital files are to be submitted for reproduction in panels. Digital file specifications and image resolution information will be supplied by designer.
- C. All separations must be reviewed by designer both before separation work is done and after scanning is complete to review for color correctness. Proofs of finals panels will be required to review proper reproduction.

Supplier for the above described photographic panels is:

FOSSIL Industries
44 Jefryn Boulevard
Deer Park, NY 11729
1-800-244-9809

2.17 **FABRIC BANNERS**

SuperPrint Plus FL is a 13 oz. front-lit billboard and banner material that was designed to be the economical alternative to Normandy Pro and JetFlex. It is compatible with latex, solvent and UV inks. The face film provides exceptional ink receptivity and consistent prints from batch to batch. SuperPrint Plus is available in matte and gloss finishes in widths ranging from 38" – 196". It also comes in 492' rolls that are specifically engineered for HP Turbojet and screen-printing machines. These rolls come in 51" and 63" widths and are wound face out on a 6" core.

CHARACTERISTICS	TEST METHOD	METRIC	ENGLISH
Support Cloth	DIN60001	Polyester	Polyester
Yard dtex	DIN60001	1100 x 1100 dtex	1000 x 1000 denier
Type of Coating	N/A	PVC	PVC
Total Weight	N/A	440 g/m2	13 oz.
Tensile Strength	DIN53352	1350 x 1200	154.2 x
	B53424	N/5cm	137lbs/in
Tear Strength (warp/weft)	DIN53356	245 x 185 N	55 x 41.6 lbs
	B53424		
Flame Resistance	NFPA701, B1		
Low Temperature (No Crack at:)	DIN53357	-20°C	-4°F
Fungus Resistance	N/A	N/A	N/A
Puncture Resistance	N/A	N/A	N/A
RF Weldable (Heat Sealable)	Yes		

The information on physical and chemical characteristics is based upon tests believed to be reliable. The values are intended only as a source of information. A legally binding guarantee of specific properties is not to be inferred from our specifications. They are given without guaranty and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of this material for his/her specific purpose. (Data represents averages and is not intended for use as a specification.)

Ultraflex Headquarters

1578 Sussex Turnpike, Building 4

Randolph, NJ 07869

P. 973-627-8608

F. 973-627-8506

SECTION 10425

SPECIALTIES - SIGNAGE

PART 3 - EXECUTION

3.01 RELATED DOCUMENTS

- A. Drawings, Contract Provisions, Special Provisions, Supplementary Provisions and Division I Specification Sections apply to the work of this Section.

3.02 FABRICATION / GENERAL SIGN CONSTRUCTION

- A. Intent of Specifications: It is intended that all finished work be of the highest quality to pass eye-level examination and scrutiny by the designer and TOG.
1. Construct all work to eliminate burrs, dents, cutting edges, and sharp corners.
 2. Finish welds on exposed surfaces shall be of the correct type to eliminate distortions of flat surfaces, and to be imperceptible in the finished work. At exposed connections, all flux, oxides, slag, and discolorations shall be removed so that these areas match the finish of adjacent areas. Any damage by welding must be repaired by grinding, polishing or buffing.
 3. Except as indicated or directed otherwise, finish all surfaces smooth.
 4. Surfaces which are intended to be flat shall be without dents bulges, oil canning, gaps, or other physical deformities.
 5. Surfaces which are intended to be curved shall be smoothly free-flowing to required shapes.
 6. Except where approved otherwise by Designer, conceal all fasteners.
 7. Make access panels tight-fitting, lightproof, and flush with adjacent surfaces.
 8. Carefully follow manufacturer's recommended fabricating procedures regarding expansion/contraction, fastening, and restraining of acrylic plastic.
 9. Exercise care to assure that polished, plated, or finished surfaces are unblemished in the finished work
 10. Isolate dissimilar materials. Exercise particular care to isolate nonferrous metals from ferrous metals.
 11. Interior Signs. These signs will not normally be illuminated. Designers of signing should coordinate their work with building lighting in order to provide ambient lighting of signs of at least 25 foot candles with appropriate color characteristics. Primary signs shall be externally illuminated or trans-illuminated. In either case, a maximum of 25 percent of the total sign area may exceed a surface luminance of 30 candles per square foot. No part of the sign shall exceed a surface luminance of 50 candles per square foot and the uniformity ratio of surface luminance shall be no greater than 1 to 5.

3.03 INSTALLATION - GENERAL

- A. Verify the exact location with the Designer and TOG for all signs, whether they are or are not exactly dimensioned on the Drawings. Sign location plans represent general sign locations only. The indicator representing the sign is not to scale, nor does it show exact placement. Field verify all sign locations. Prior to installation, Fabricator must examine areas, surfaces and conditions under which work is to be installed. Fabricator shall inspect installation locations for conditions which will adversely affect execution, permanence and quality of work and shall not proceed with installation until unsatisfactory conditions have been corrected. Notify the Designer and TOG in writing of these conditions.
- B. Sign installation work shall be under the direct supervision of a journeyman sign erector.
- C. Except as may be indicated otherwise on the drawings, install prefabricated work plumb, level, square, and true to line.
- D. Securely anchor work in proper location using anchors, fasteners, or other methods approved on shop and erection drawings. All anchors/fasteners shall be appropriate for the anchorage condition and be of non-corrosive type.
- E. Fabricator shall establish a timetable for completion of installation by deadline date and final inspection. Coordinate installation schedule with owner prior to installation.
- F. Surfaces under adhesive-applied signs shall be smooth, clean, and free of dust, oil, fingerprints, or other foreign matter. All adhesives required shall be used in accordance with the manufacturer's specifications. The sign shall be permanently installed and not removable unless indicated on the drawings. No adhesives which will fade, discolor or delaminate as a result of ultra violet light or heat shall be used.

3.04 INSPECTION

- A. Inspect site with TOG and designer to determine specific installation conditions and priorities. For exact installation locations for each sign, consult with Designer and TOG.
- B. Coordinate anchor details and materials with designer. Notify designer in writing of conditions detrimental to proper and timely installation of sign work.

3.05 PROPERTY LINES, EASEMENT, UTILITIES

- A. Contractor shall be responsible for verifying location of existing property lines, easements and utilities that may impact the installation location of any sign structure. Conditions contrary to Architect's indicated locations shall be submitted to the Architect in written or diagrammatic form for review.

3.06 SURFACE CONDITIONS

- A. Examine areas and conditions under which work of this specification will be performed. Conditions detrimental to timely and proper completion of Work shall be corrected by the contractor responsible for that portion of the work. Do not proceed until unsatisfactory conditions are corrected.

CONCRETE NOT APPLICABLE

3.07 EXECUTION: CONCRETE

- A. Examination: Examine the existing substrates, adjoining construction and conditions under which the Work is to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected.
- B. Formwork: Provide formwork to retain cement floor fill in locations where fill does not terminate at vertical wall and other support surfaces. Construct flatwork to provide concrete floor fill that is level.
- C. Substrate bonding: Clean existing substrate of all deleterious materials, prepare substrates to receive floor fill and apply surface bonding materials in accordance with the bonding agent manufacturer's written requirements.
- D. Reinforcement: Install reinforcement uniformly in all concrete. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Mixing Concrete: Ready Mixed Concrete: Comply with ASTM C94. Discharge the concrete completely at the site within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather reduce this time limit so that no stiffening of the concrete shall occur until after it has been placed. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
1. Batch Mixing at Site: Comply with ACI 301, Chapter 7, Paragraph 7.2. Excessive mixing requiring the addition of water to preserve the required consistency will not be permitted. Mix concrete to a consistency which can be readily placed without segregation. Where admixtures are accepted by the COTR, equip mixers with a device for measuring and dispensing the admixture.
 2. Lightweight Concrete: Mix lightweight concrete in accordance with the directions of the approved lightweight aggregate manufacturer and so as to obtain the specified compressive strength for each use.
 3. Retempering: Comply with ACI 301, Chapter 7, Paragraph 7.5. Retempering water may be added only under the supervision and approval of the Authority's Testing Agency.
- F. Joints and Embedded Items: Construction Joints: Comply with ACI 301, Chapter 6, Paragraph 6.1.

- I. Embedded Items: Comply with ACI 301, Chapter 6, Paragraphs 6.4 and 6.5. Accurately set anchorage devices by line and transit, and coordinate the locating of all anchorage devices to be set for the accommodation of the work of other trades. Locate anchor bolts as shown on the Drawings and on shop drawings. Obtain necessary templates as required for the proper setting of anchor bolts and other items for mechanical equipment, as required. Assist other trades in the installation of items are to be installed in concrete.
- G. Finishing: General Requirements for Flatwork: Strike-off top surfaces of all flatwork true and level. Use construction techniques such as adjustment of pour size, adjustable screeds, and other appropriate means to ensure compliance with these requirements. Monitor and survey pour areas prior to, during and after placement operations. Where final survey indicates non-compliance with flatness tolerances, provide corrective work to satisfy tolerance and finish requirements of the Contract Documents.

3.08 APPLIED LETTERING AND GRAPHICS

- A. Lettering shown on sign type drawings are intended as guidelines for layouts, type size and font face only. Complete copy text shall be in accordance with information noted on drawings.
- B. Spelling and punctuation shall be correct. Should an error in spelling or punctuation be found, or spelling appear questionable, notify Designer and TOG before proceeding.
- C. Sign type drawings and layout of copy contained within the schedule of graphics are based on scale calculations of the message lengths within given estimated sign areas. Should conflict arise in final message layout, notify Designer and TOG before proceeding.
- D. Align letterforms to maintain baseline parallel to sign format. Maintain margins as specified in sign type layouts.

3.09 PAINTING AND FINISHING

- A. Definitions:
 - I. The term "paint" implies that each finish is comprised of materials and quantities recommended by the approved materials manufacturer for the surface to be finished, and includes preparation, priming/sealing, and intermediate and finish coats as applicable.
- B. Sample finishes: Refer to Article 1.04.

C. PAINT:

1. Provide an aliphatic polyurethane enamel with ultraviolet inhibitors, lightfast, weather, abrasion and wear resistant additives supplies by:
M.A.P. Acrylic Polyurethane, Matthews Paint Co, Kenosha WI. (1-800-323-6593)
2. Compile and maintain a listing of all paint colors with the factory batch number and formulation code for all paints and coatings. at the date of substantial completion.

D. Application and finish: Coatings shall be applied by an applicator having facilities, equipment and experience required to apply the finish to the manufacturers specifications. All substrates shall be cleaned of any foreign substance such as oil, grease, dirt, etc. Typical finish shall consist of:

1. An acid-wash prime coat shall be applied per manufacturer's specifications when using raw metal as a substrate.
2. Primer / filler seal coat, properly applied to all substrates per manufacturer's specifications including dry film thickness.
4. Primer / filler coat shall be sanded smooth before top-coating and coated with a minimum of two applications of acrylic polyurethane in colors indicated on the design drawings. Top-coating shall be applied per manufacturer's recommendations to a minimum total dry film thickness of 2.0 mil.
5. Satin finish unless otherwise noted in drawings.

E. Coating Performance Criteria: (In addition to above)

1. Dry film thickness: Within minus 5% to plus 25% of the specified thickness.
2. Abrasion resistance: ASTM D968. Coefficient of abrasion; 65 minimum.
3. Pencil hardness: 2H minimum.
4. Salt spray: ASTM B-117 withstanding 3500 hours, 100% salt fog at 95 degrees F and retain adhesion, corrosion resistance, color and gloss with no more than minimal blisters to larger than No. 8 (ASTM D-714), and no more than 1/16"creepage or loss of adhesion from scribed line.
5. Humidity test: ASTM D-2247 withstand 3500 hours 100% relative humidity at 95 to 100 degrees F and retain adhesion , corrosion resistance, color and gloss with no more than "minimal blisters to larger that No. 8 (ASTM D-714), and no more than 1/16" creepage or loss of adhesion from scribed line.
6. Gloss: ATSM D523, +/- 5%, using a 60 degree glossmeter, of the gloss level selected by the designer.
7. Adhesion: No removal of any finish after 1/16" cross-hatching to base metal, impacting to the point of metal rupture, and subjecting to application and quick of cellophane tape.

- F. Surfaces under painted finish shall be smooth, clean, and free of dust, oil, silicones, fingerprints, or other foreign matter. Artwork to be accurately reproduced with all edges straight and true and all finishes smooth and with no visible imperfections.
- G. Pigmented (Opaque) finishes: Completely cover to provide an opaque, smooth surface of uniform color, appearance, and cover. Cloudiness, spotting, holidays, laps, brush marks, orange peel, runs sags, or other surface imperfections will not be acceptable.
- H. Provide clear topcoat over all painted surfaces: Matthews #42-228 Satin finish.

SCREEN PRINTING NOT APPLICABLE

3.10 SCREEN PRINTING

- A. All silkscreening shall be executed from photoscreens or negatives. Negatives used in exposing shall be clean and accurately exposed, free of imperfections, dust particles and fully retouched. Pattern-cut screens may be used where non-repeat copy is required, however, copy mask shall be equivalent to photoscreen quality. Fabricator shall not use any images shown in this manual or drawings as camera-ready art. Digital artwork will be provided by the designer

3.11 FINISHES - GENERAL

- A. Protect finishes on exposed surfaces from damage by application of strippable temporary protective covering prior to shipment.
- B. All painted or screen-printing shall be free of oxidation, cracking, chipping, or any defect. Fabricator shall be required to touch-up or otherwise repair any damage to painted surfaces to the satisfaction of the designer or owner.
- C. Corrosion Protection: Coat concealed surfaces which will be in contact with concrete, stone, masonry, wood, or dissimilar metals, in exterior work, with a heavy or double coat of bituminous paint.

3.12 TOUCH-UP

- A. Touch-up paint: Provide TOG with one 1/2 pint can of touch-up paint of each type and color used in the work.

3.13 SITE CLEANUP

- A. Clean-up during construction:
 - 1. Execute cleaning to ensure excavation sites, premises, adjacent and public properties are maintained free from accumulation of materials and construction debris.
- B. Final Clean-up:
 - 1. At completion of work, clean sign surfaces so they are free of residue and other foreign materials, leaving ready for acceptance by TOG and designer.
 - 2. Repair, replace, and clean-up surrounding landscaping adjacent to excavated areas, restoring landscaping to original condition or better.
 - 3. All evidence of installation work or damages incurred on other surfaces shall be cleaned or repaired prior to completion of work. Protect all work from damage until acceptance by the owner.
 - 4. Remove protective materials and dispose of properly.
 - 9. Broom clean paved or concrete surfaces. Rake clean other surfaces of excavation site.

3.14 WARRANTIES AND CERTIFICATE OF COMPLETION

- A. Provide written warranty signed by the fabricator agreeing to repair or replace products which fail because of faulty materials, workmanship, and design for a period of one year from date of substantial completion, or within parts manufacturer's specified warranty, whichever is greater.
- B. Failure includes, but is not limited to: Fading, cracking, crazing, warping, peeling, fading, oxidizing, delaminating, rusting, corroding, improper functioning of electrical apparatus other than lamps, loose welds or fasteners, loose joints or panels, and structural failure, including distortion by whatever cause, shall be construed to mean failure because of faulty materials and workmanship.
- C. Failures during the warranty period shall be repaired or replaced to the satisfaction of the designer and owner.
- D. On products corrected under warranty shall have a warranty extension of one year from the date of correction in addition to the two year warranty.

- E. When the fabricator considers the work to be acceptable to the owner and designer and is substantially completed, the Fabricator shall submit in duplicate a written request for a Certificate of Substantial Completion which shall include written warranties and a punch-list. The failure to include any items on such list does not alter the responsibility of the fabricator to complete all work in accordance with the sign program. When the Designer and TOG has inspected the work and determines that the work or designated portion thereof is substantially complete, he will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion and shall fix the schedule in which the Fabricator shall complete the items listed therein.
- F. Warranties required by the sign program shall commence on the Date of Substantial Completion of the Work or designated portion hereof unless otherwise provided in the Certificate of Substantial Completion.
- G. The form of warranty shall be as follows:
 - 1. Name of Project
 - 2. We warrant that all materials, workmanship and equipment furnished under this Contract are new unless otherwise specified, and that all work is free from faults and defects and in conformance with the sign program or that becomes or is found to be unacceptable or defective within one (1) year after the Date of Substantial completion. We will bear the costs of making good any defective products, including damage caused by its correction or removal and reinstallation, to the TOG's property or to property for which the TOG has previously given the Fabricator written acceptance of the defect. The warranty period shall begin at 12:00 noon on the date established in the Certificate of Substantial Completion.

Signed: _____
Name of Fabricator

Authorized Representative

Date

3.15 CONTRACTOR'S LIABILITY INSURANCE

- A. The contractor shall purchase and maintain at its own expense insurance required by this paragraph 6.05A. applicable to all claims which may arise out of or result from the contractor's operations under the contract, whether such operations be by the contractor, by any subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.
 - 1. Worker's or Workmen's Compensation Insurance.
 - 2. Employer's Liability Insurance.
 - 3. Comprehensive general liability insurance for bodily injury and property damage, including loss of use of property, arising out of any occurrence. This insurance should include the following extensions:
 - a Products and completed operations coverage for a period of at least two years;
 - b Personal injury liability coverage (including contractual coverage);
 - c Contractual liability insurance to cover the contractor's obligation to the TOG under paragraph 2.
 - d Broad form property damage (including completed operations);
 - e Independent contractor's coverage.
 - f "X", "C", and "U" coverage applying to explosion, collapse of other structures and underground foundations;
 - 4. Business automobile liability insurance which will pay for liabilities arising out of accidents involving the ownership, operation, maintenance or use including the loading or unloading of any automobile.
 - 5. Umbrella excess liability.
- B. The coverage listed in paragraph 3.12 A shall be written for not less than required b the TOG's Contract.
- C. Satisfactory proof of purchase of required insurance shall be furnished on the Accord format for certificates prior to execution of the contract. Certificates must be amended to indicate: "Should any of the described policies be canceled before the expiration date thereof, or non-renewed, the issuing company will give thirty (30) days prior written notice to the certificate holder," each certificate should indicate the insurer, the appropriate policy number (s), the policy expiration date(s), the limits of liability in effect, and the Best's rating and financial rating of the insurer. A certificate will be accepted only if signed by an authorized representative of the insurer.
- D. Insurance certificates will be accepted only from insurance having a minimum Best's rating of Class A for the policy holders' rating and Class IX for the financial rating. Insurers must be authorized to do business under the laws of the State Certificates must note that TOG is additionally insured.

- E. No work shall be started at the site until appropriate certificates of insurance are filed with and approved by TOG.

3.16 PUBLIC CONVENIENCE AND SAFETY

- A. The contractor at all times shall conduct the work in such a manner as to relate the least practicable obstruction to all forms of traffic. The convenience of the general public, tenants, and of the residents along and/or adjacent to the improvement shall be respected. Material stored upon the project shall be placed so as to cause a minimum of obstruction to the public. The contractor shall, unless otherwise specified, provide and maintain in passable condition such temporary access, roads and bridges as may be necessary to accommodate traffic diverted from the project under construction or using the project under construction and shall provide and maintain in a safe condition temporary approaches to, and crossing of, the project. Existing facilities planned to be removed, but which might be of service to the public during construction are not to be disturbed until other and adequate provisions are made. Fire hydrants on or adjacent to the project shall be kept accessible to fire apparatus at all times, and no materials or obstruction shall be placed within fifteen (15) feet of any such hydrant. Work closed down for the winter or at any other times shall be left entirely accessible at all points to fire apparatus. All footway, gutters, sewer inlets, and portions of the project including the work under construction shall not be obstructed more than is absolutely necessary.

3.17 BARRICADES AND WARNING SIGNS:

- A. The contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs, and other control devices, and shall take all necessary precautions for the protection of the work and safety of the public. All highways and other facilities closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated during hours of darkness with electric lights.
- B. The contractor shall erect warning signs in advance of any place on the project where operations may interfere with the use of the facility by vehicular or pedestrian traffic, and at all other points where the new work crosses or coincides with an existing roadway or traffic lane(s). Such warning signs shall be constructed and erected in accordance with the FHWA Manual on Uniform Traffic Control Devices or as directed.
- C. In cases where the contractor's sequence of operations results in grade differentials which would be hazardous to vehicular or pedestrian traffic, the contractor will, at the direction of the TOG and at no additional cost to owner provide suitable substantial guardrail to the extent determined by that office.

SECTION 10425

SPECIALTIES - SIGNAGE

PART 4 FIELD QUALITY CONTROL

4.01 INSPECTION

- A. Designer reserves the right to inspect work in the fabrication shop before it is shipped to the job site for installation.
 - 1. Refer to Article 1.03 SUBMITTALS, and text therein.
 - 2. Fabricator shall inspect installation locations for conditions which will adversely affect execution, permanence and quality of work, and shall not proceed with installation until unsatisfactory conditions have been corrected.

4.02 WORKMANSHIP

- A. Tradeswork: It is intended that the workmanship be of the highest quality obtainable by the respective trades and crafts experienced in the fabrication of signs, and that all work be done by journeymen, or by tradesmen under the direct supervision of journeymen.
 - 1. "Journeymen" shall be interpreted to mean those craftsmen who have the qualifications and experience to meet the requirements described in the Job Classification and Descriptions for the Electric Sign Industry, as developed by the NESA/TRI-TRADES COMMITTEE.
- B. Artisans: It is intended that work of an artistic or specialized nature such as gilding, artistic carving and engraving, artistic painting, when included as part of Contract, be executed by artisans with experience, credentials, and reputation to satisfy the demands of the Designer and TOG.

4.03 SIGN CONTRACTOR'S RESPONSIBILITIES

- A. Review shop drawings, product data and samples prior to submittal to Designer.
- B. Verify field measurements and field construction criteria.
- C. Coordinate each submittal with work of the project and Contract Documents .
- D. Contractor responsible for errors and omissions in submittals or deviations from Contract Documents is not relieved by Designer's review of submittals.
- E. Contractor responsible for deviations in submittals from requirements of Contract Documents is not relieved by Designer's review of submittals.
- F. Notify Designer in writing of deviations from requirements of Contract Documents at time submittals are made.
 - 1. A "deviation" shall be construed to mean a minor change to the sequence indicated on Drawings or specified.
 - a. A "deviation" is not intended to allow substitutions or product options.

- 2. In addition to notifying Designer in writing of deviations, circle deviations on shop drawings.
- G. Do not begin work which requires submittals until submittals have been returned with Designer's and TOG stamp and initials or signature indicating review and approval.
- H. After Designer's and TOG's review, distribute copies.
- I. Contractor responsible for coordination of work with other trades: i.e. electrical, landscaping, utilities, etc.

END OF SECTION